CULTURAL RESOURCE MANAGEMENT PLAN FOR THE DENALI HIGHWAY LANDS, CENTRAL ALASKA

DRAFT

Richard VanderHoek

September 2005

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Division of Parks and Outdoor Recreation

Alaska Department of NATURAL RESOURCES

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Cover: Landmark Gap Lake and western Landmark Gap, Denali Block I. The view is looking north, with the Alaska Range in the distance. Photo by B. Wygal, July 28, 2004.

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ABSTRACT

In 2003 the Bureau of Land Management began the process of conveying over 200,000 acres of land in several blocks to the State in areas north of the Denali Highway in central Alaska, as part of Statehood land selections. One of these, termed Denali Block I, contains the northern fifth of the Tangle Lakes Archaeological District (TLAD), a 226,660 acre unit listed in the National Register of Historic Places. This document is to provide guidance in the management of the cultural resources on state lands in the TLAD, and on other state lands in the Denali Highway region.

The Alaska Department of Natural Resources (DNR) is the State agency with the authority and responsibility for managing resources on state lands, with DNR/Division of Mining, Land and Water responsible for managing the State lands along the Denali Highway. Most of the Denali Highway lands are considered multiple use, with the exception of a special use area that encloses the northern section of the TLAD.

DNR takes over the role of cultural resource manager from BLM, who has actively managed the cultural resources since the 1970s. It is the responsibility of DNR/Division of Parks and Outdoor Recreation/ Office of History and Archaeology (OHA) to advise DNR/DMLW on the management of cultural resources on State lands.

The primary mechanism of disturbance for archaeological sites in the TLAD has been Off Highway Vehicles (OHVs). Trails were monitored in the TLAD and the Denali Blocks in 2003, 2004, and 2005, and their impacts on cultural resources accessed.

Resource extraction, road development or modification, and other human activities all have potential to impact cultural resources. This report sets out a series of steps for agencies and commercial interests to follow, enabling them to comply with laws and regulations protecting cultural resources.

This report also sets forth cultural resource protection recommendations for OHA, and guidance for DNR/DMLW on managing the cultural resources in the TLAD and Denali Highway region.

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I. INTRODUCTION

Purpose of the Plan

In early 2003, the Bureau of Land Management (BLM) conveyed to the State of Alaska a 235,000 acre block in the Tangle Lakes region (Denali Block I: Figures 1 and 2). Additional lands near the Susitna River (Denali Blocks II East and West) will soon be conveyed to the State as part of statehood land selection (Figures 1 and 3). Denali Block I contains part of the Tangle Lakes Archaeological District (TLAD), listed in the National Register of Historic Places. Denali Block II contains the historic Valdez Creek Mining District and other significant historic and prehistoric resources. The purpose of this plan is to develop guidelines for how the cultural resources on State of Alaska lands in this region should be managed. This plan sets forth land management and land use information, cultural resource history, areas of concern, and management recommendations for the cultural resources on Denali Highway lands.

The region's cultural record, scenery, wildlife, and mineral potential make it an important area for a variety of interest groups in the State. This land is very important to the residents of the State of Alaska and to its tourist industry and mining industry. Proper management of the cultural resources on this land is essential if the State is to fulfill its legal obligations to preserve these resources for future generations.

Description of the Planning Area

The Denali Blocks are located in interior Alaska south of the Alaska Range and north and south of the Denali Highway. Denali Block I was conveyed from the BLM to the State of Alaska in early 2003. It is located north of the Denali Highway between miles 12 and 41, and stretches north from the highway over 18 miles to the crests of the first series of peaks in the Alaska Range. Denali Block I contains approximately 235,000 acres of land, including the northern fifth of the Tangle Lakes Archaeological District (TLAD). The TLAD is 226,660 acres in size, and lies on both state land, north of the Denali Highway, and on BLM land south of the highway. Under state control, the northern portion of the TLAD (41,339 acres) is enclosed in a substantially larger area called the Tangle Lakes Archaeological District/Special Use Area (TLAD/SUA) (63,620 acres – see Figures 2 and 4).

In January 2004 the State of Alaska announced which additional lands along the Denali Highway it wanted conveyed that year from BLM. Blocks of land totaling 117,337 acres were selected as Denali Block II. These lands are located east and west of the Susitna River, with the eastern block (Denali Block II East) north of the highway and the western block (Denali Block II West) south of the highway (Figure 3). The eastern block is larger, and contains the historic Valdez Creek Mining District. Some of these lands have been transferred to the State, and some are in the process of being transferred.

In November 2004 the State of Alaska circulated its State Selection Prioritization, which prioritized the remainder of lands to be conveyed from BLM to the State. These selections include large blocks of land south of the Denali Highway and between Denali Block I and Denali Block II (Figure 1). The conveyance process will be completed by 2009. After these lands are conveyed, the State of Alaska will be the landowner of the majority of lands along the Denali Highway.

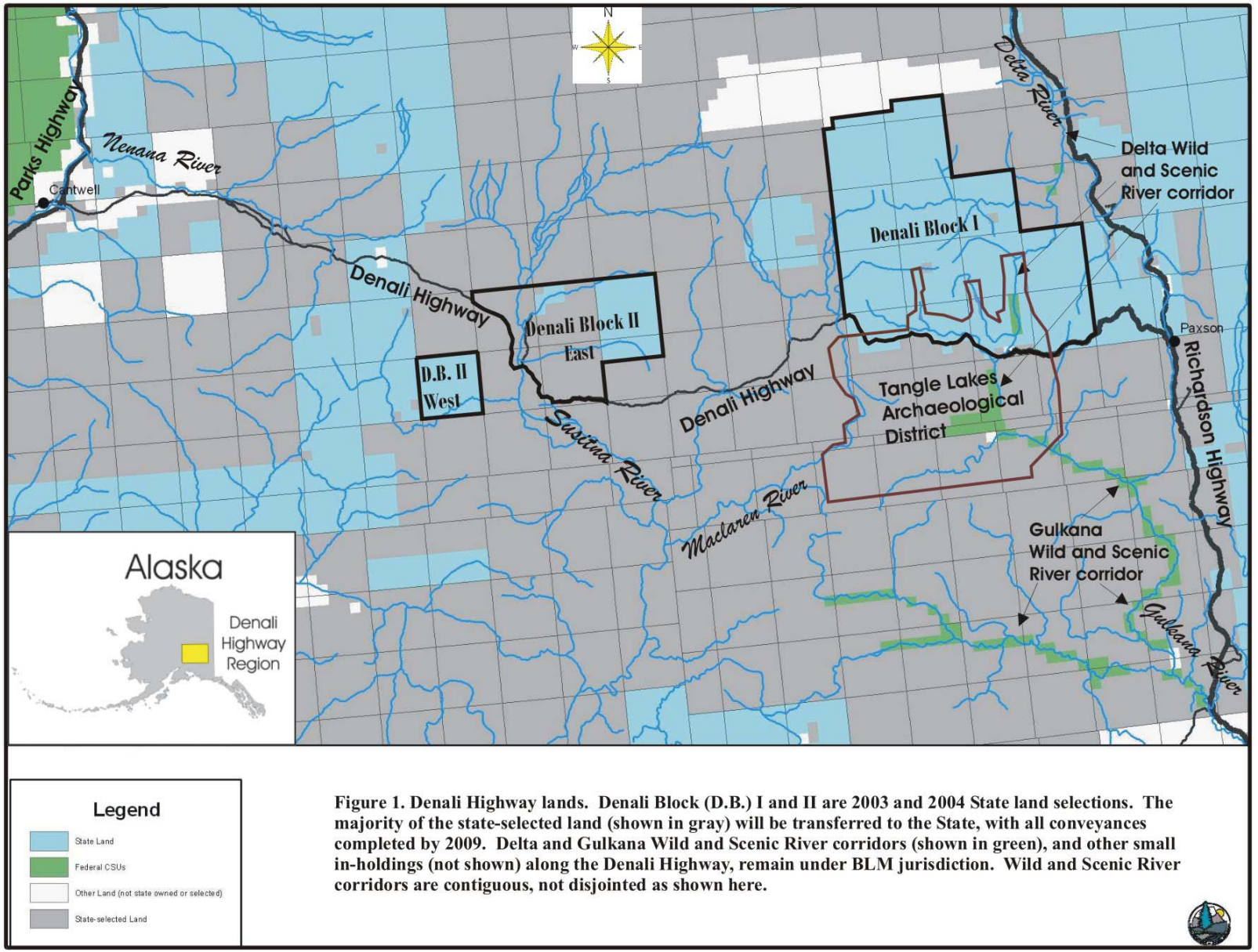


Figure 1. Denali Highway lands. Denali Block (D.B.) I and II are 2003 and 2004 State land selections. The majority of the state-selected land (shown in gray) will be transferred to the State, with all conveyances completed by 2009. Delta and Gulkana Wild and Scenic River corridors (shown in green), and other small in-holdings (not shown) along the Denali Highway, remain under BLM jurisdiction. Wild and Scenic River corridors are contiguous, not disjointed as shown here.

History of Plan Development

The Denali Highway lands and how they are administered are matters of concern to many Alaskans. Members of Ahtna Incorporated, miners, hunters, fishermen, bird watchers and other recreational users have all expressed interest and concern about how the State of Alaska should administer the lands being transferred to it along the Denali Highway. Public meetings held the year before the initial transfer were attended by many individuals who wanted the State to have enough information about the region to make informed management decisions. The Tangle Lakes region has natural and cultural resources important to the public, yet is a multi-use region which allows a variety of activities including placer and hard-rock mining. State funding for Department of Natural Resources/Division of Mining, Land and Water (DNR/DMLW) and DNR/ Division of Parks and Outdoor Recreation/Office of History and Archaeology (DPOR/OHA) positions was approved to address all concerns.

Management Authority and Responsibility

The Alaska Department of Natural Resources (DNR) is the state agency with the authority and responsibility for managing resources on state lands. The DNR/DMLW is the state division responsible for managing state lands along the Denali Highway. It is charged with making the region available to the public for a variety of uses while protecting aspects of the region that have been deemed important to preserve, particularly the cultural resources. The Alaska Historic Preservation Act (AHPA)(Alaska Statutes, 41.35.010) mandates the State to "preserve and protect the historic, prehistoric and archaeological resources in Alaska from desecration and destruction so that the scientific, historic and cultural heritage embodied in these resources may pass undiminished to future generations." The Denali Highway lands managed by the State contain significant cultural resources.

The DNR/DPOR/OHA advises DNR/DMLW on the management of cultural resources on State land. OHA is to consult with all state agencies on cultural resources, helping to coordinate management of land for the protection of the resources, and helping them comply with state and federal Cultural Resource Management (CRM) laws and regulations. OHA administers the Alaska State Historic Preservation Program (ASHPP), issues archaeological permits, maintains an inventory of cultural resource information, and conducts survey and data recovery projects. OHA also has a federal mandate to consult on cultural resources as the designated State Historic Preservation Office (SHPO). Under Section 106 of the National Historic Preservation Act (NHPA) SHPO consultation is required for any undertaking which uses federal funds or permits.

Cultural resources are an important focus here because Denali Block I contains a large part of the TLAD. The TLAD is located in a high alpine region that is topographically striking because of the frequency of Pleistocene glacial landforms: eskers and moraines, glacially carved valleys, and vast regions of kettle and kame topography. This same topography provided Holocene hunters with travel routes and hunting locations for caribou and other game animals. The archaeological remains left by these and later people were studied by researchers in the 1960s and 1970s, when the region was under the control of the BLM. This study resulted in the designation of the area as an Archaeological District in 1971, and entry of the district in the National Register of Historic Places because of the important information it has yielded, and it's potential to

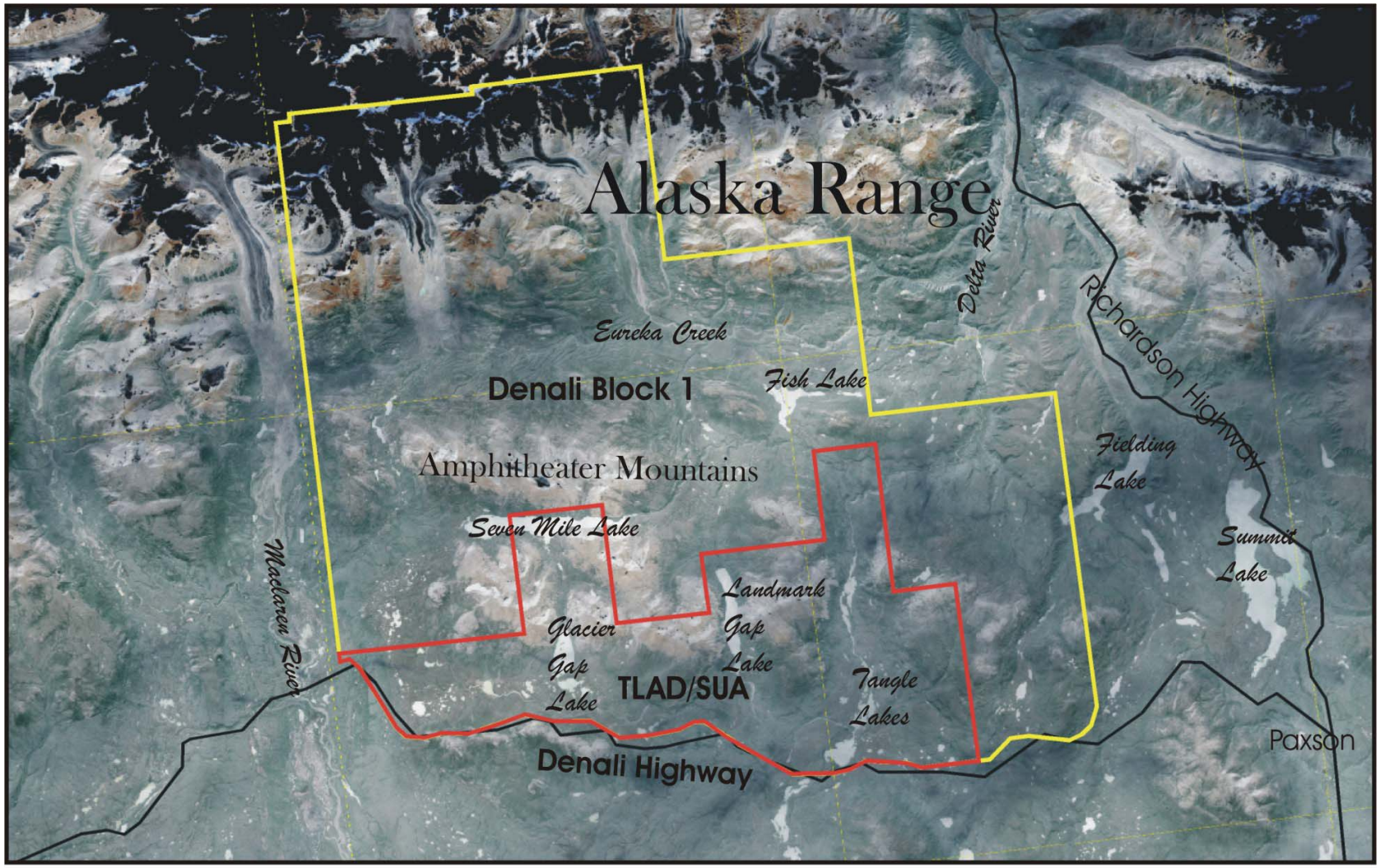


Figure 2. Landsat 7 false-color satellite photo of Denali Block I and Tangle Lake Archaeological District/Special Use Area (TLAD/SUA), central Alaska. Black in upper part of image is glacial ice.

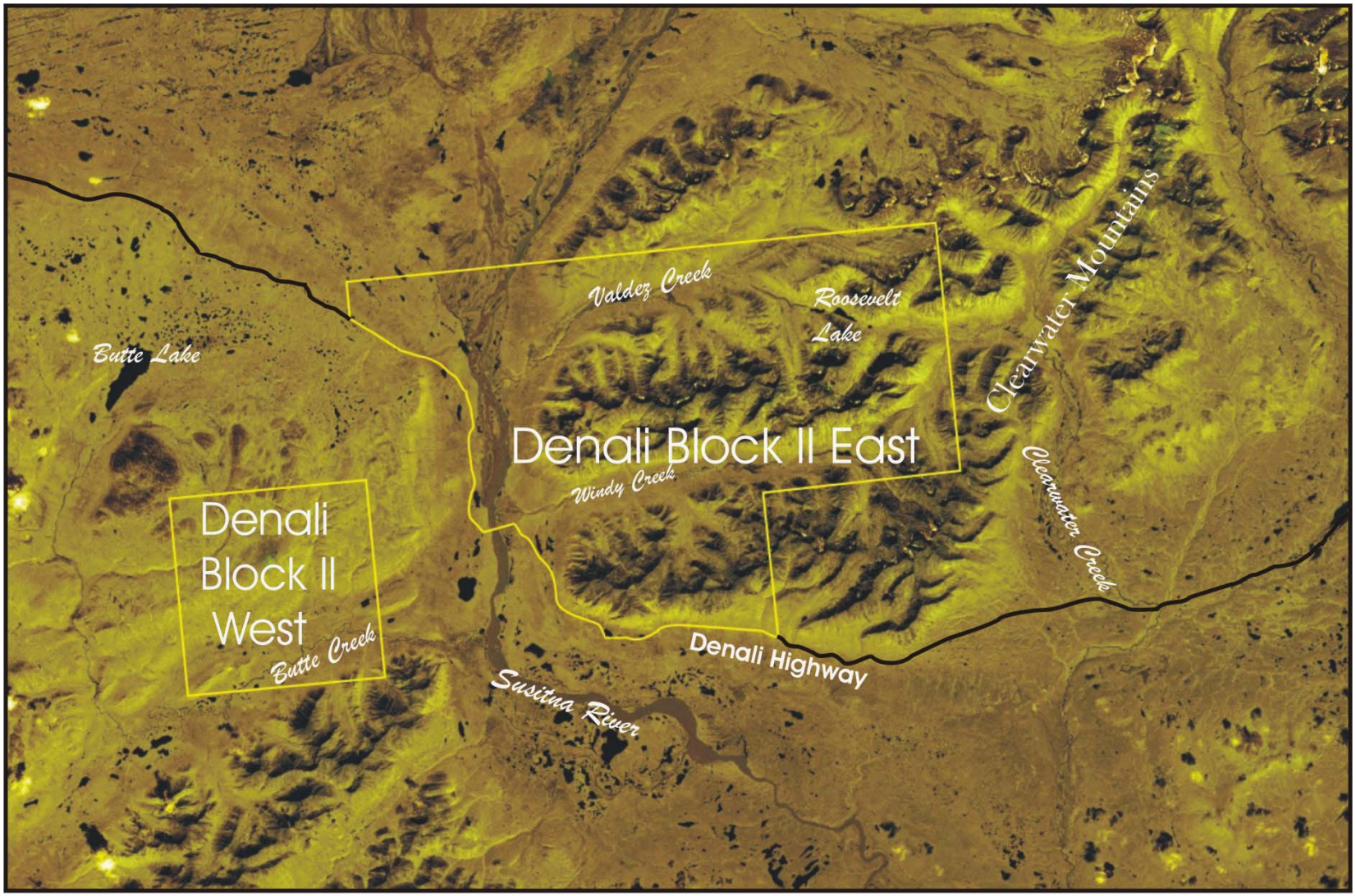


Figure 3. Landsat 7false-color satellite photo of Denali Block II East and West. The Denali Block II East contains much of the historic Valdez Creek Mining District.

yield additional information, to understanding the prehistory and early history of central Alaska.

II. REGIONAL LAND MANAGEMENT

Department of Natural Resources Management Plans for Denali Highway Lands

DNR management policies for the Denali Highway region are included in three management plans, corresponding with the three river drainages in the region. The Copper River Basin Area Plan includes a relatively small section of land on the eastern end of the Denali Highway that includes the land around Swede Lake and Paxson Mountain (DNR and Alaska Department of Fish & Game 1986). The Tanana Basin Area Plan includes the Delta River drainage section of the Denali Highway, from just east of the Tangle Lakes almost to the Maclaren River (Subregion 5), and the western end of the highway (Subregion 4) that is drained by the Nenana River (DNR 1991). The central section of the Denali Highway from the Maclaren River west to Brushkana Creek is included in the Susitna Area Plan (DNR et al., 1985).

Land Designations on Denali Highway Lands

State of Alaska lands are multiple use (also called multi-use) lands unless otherwise restricted. Denali Highway lands are multi-use lands, with the exception of the TLAD/SUA, a 63,620 acre block of land on the south side of Denali Block I, designated a "special use area" (Figure 4). The TLAD/SUA is a state designation for land which encloses the northern section of the TLAD, a 226,660 acre block found both north and south of the Denali Highway (Figure 1).

Generally Allowed Uses

Generally allowed uses on most Denali Highway lands managed by DNR/DMLW include hunting, fishing, berry picking, hiking, backpacking, skiing, climbing, bicycling, travel by horse or dogsled or with pack animals or livestock. Other generally allowed off-road uses include using a powerboat, raft or canoe, landing an aircraft, using a highway vehicle with a curb weight of up to 10,000 pounds, or an Off Highway Vehicle (OHV) like snowmobile or four-wheeler with a curb weight of up to 1,500 pounds, if the off-road use does not cause water quality degradation, alteration of drainage systems, significant rutting, ground disturbance or thermal erosion (DNR 2004).

Subsistence hunting on state lands is regulated by the Alaska Department of Fish and Game(ADF & G). The Denali Highway is in Game Management Unit 13, with large mammal hunting administered under the Tier II system.

Tangle Lakes Archaeological District/Special Use Area Restrictions

The 63,620 acres of the TLAD/SUA have more use restrictions than most other Denali Highway lands. Between May 18 and October 18 motorized vehicles in the TLAD/SUA are restricted to the main trails (Landmark Gap, Glacier Gap, Maclaren Summit, and the first one-third mile of Seven Mile Lake) that have been approved for OHV and other vehicle use. Between October 19 and May 17 OHVs are legal to use in the TLAD/SUA provided there is at least one foot of snow or six inches of ground frost.

Leasehold Location Order No. 23, which established the TLAD/SUA, mandates that there "will be a restriction on mineral rights to protect cultural resources." Thus the TLAD/SUA is open to staking for mining claims, but the leasehold location order

Tangle Lakes Archaeological District
Special Use Area

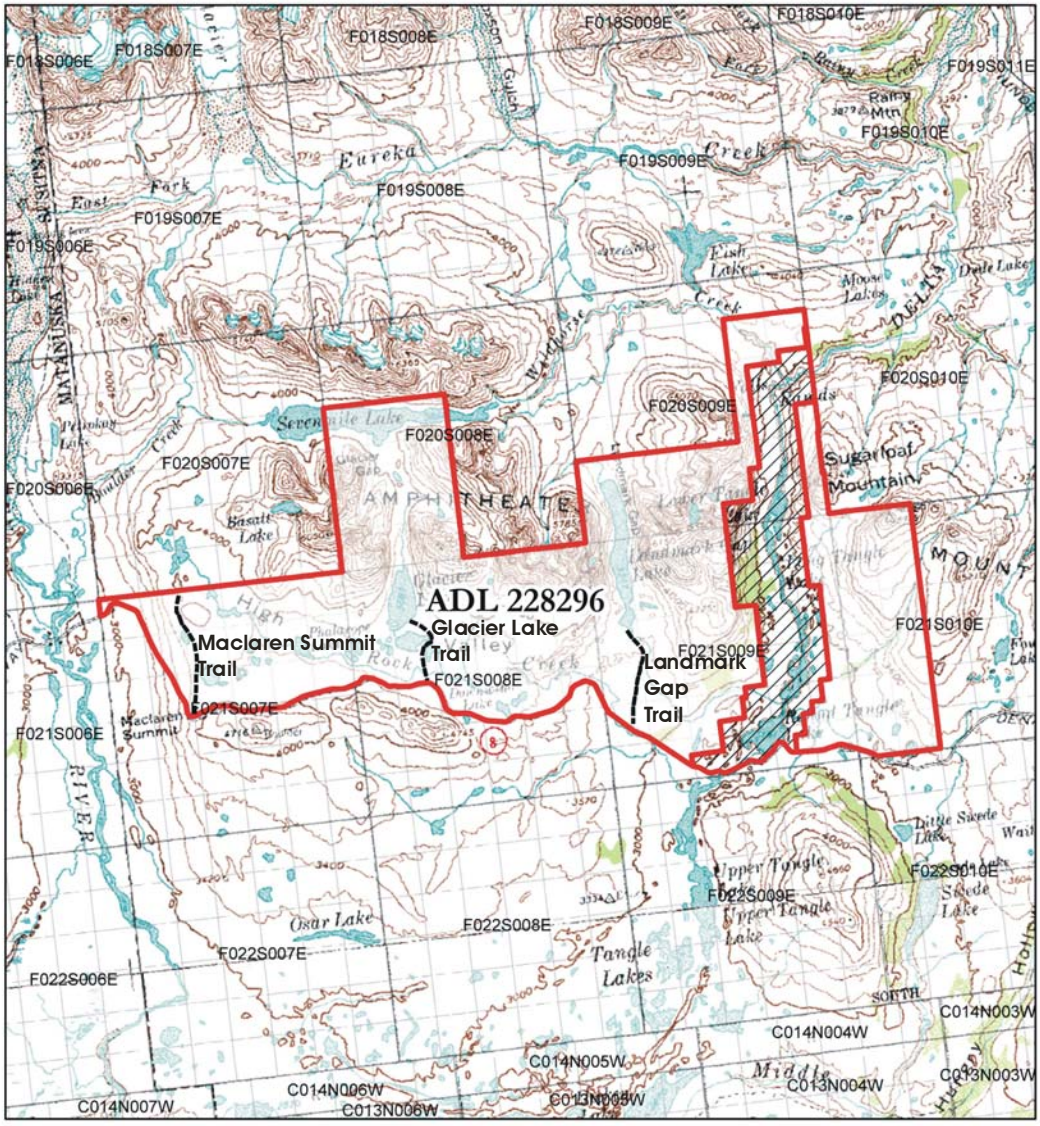


Figure 4

requires that a lease be put in place before any mining take place on TLAD/SUA lands. The lease provides DNR greater management flexibility than a traditional mining claim.

Lands Permits and Leases

A major distinction is made by the State of Alaska between recreational and commercial use of State lands. Recreational use of the Denali Highway lands is open to the generally allowed uses of state land stated above. Commercial use of these lands is subject to permitting or leasing processes. The DMLW issues land permits and leases for DNR. Within the Division, the Lands section issues permits and leases pertaining to general commercial use on state lands, and the Mining section issues leases pertaining to mining activities.

The Lands section issues permits for temporary, short-term commercial activities, and leases for long-term, permanent installations. Permits issued are either the very short term "commercial recreation permits", for activities like guided hunting spike camps, that last less than 14 days, or "land use permits", for longer term activities like guided hunting and fishing base camps, that may last longer than 14 days. Activities associated with the land use permits might have some ground disturbance activities associated with them, like the digging of an outhouse hole or the leveling of an area for the erection of a weatherport. Land use permits, unlike commercial recreation permits, require an application, insurance and bonding.

Leases issued by DNR grant land rights that, unlike permits, are not readily revocable. They are generally from 10 to 30 years in duration, and may be transferred or sold to others. Leases are issued for commercial establishments like lodges that are on permanent foundations.

Mining Claims and Leases

The Mining section of DNR/DMLW administers mining claims and issues mineral leases on state land. This can include the shorter term "prospecting sites" as well as mining claims and mining leases. Mining leases are issued for larger scale, longer term operations, and give operators legal rights that can be sold. Upland mining leases are issued for the ore body area, and mill site leases are issued for infrastructure areas (buildings, waste rock piles, tailing ponds).

Large mine developments trigger the State's Large Mine Permitting Process. Mining operations that result in water discharge or impact wetlands require National Environmental Protection Act (NEPA) [Environmental Impact Statement (EIS) or Environmental Assessment (EA)] federal permits from the U.S. Corps of Engineers (COE) and/or the Environmental Protection Agency (EPA) before the start of mining activities. The participation of these federal agencies initiates Section 106 consultation with the SHPO.

III. REGIONAL LAND USERS

Current Users of Denali Highway Lands

A distinction is made by the State of Alaska between recreational users and commercial users, with commercial users subject to permitting and leasing requirements. A wide variety of recreational uses are allowed on Denali Highway lands (see Generally Allowed Uses, above), and are reflected in the activities seen in the region. The Denali Highway and the Denali Blocks experience a variety of users throughout the summer, both by tourists from outside Alaska and by state residents. The Tangle Lakes and the streams flowing into and out of them attract fishermen, canoeists, rafters and motor boat users. Mountain bikers and OHV riders utilize regional trails, while hikers, berry pickers, nature/bird watchers and photographers hike the trails or strike across country. Campers utilize the campgrounds found along the highway as well as make their own near highway pullouts. Hunters become the dominant group in late summer and fall, focusing largely on the caribou migrating through the region, but hunting moose and bear as well. Winter use of the Denali Highway is much reduced, in part because the highway is not plowed for vehicular traffic, but is utilized by snow machiners, dog mushers and hunters.

Current commercial users of Denali Highway lands include guiding (hunting, fishing and birding) and mining operations. Placer mining operations are currently underway in the Eureka and Rainy Creek areas of Denali Block I, and the Valdez and Windy Creek regions of Denali Block II. Valdez and Windy Creeks also have small hard rock mining operations in progress.

Land Use on Adjacent Bureau of Land Management Lands

BLM, like the State of Alaska, differentiates between recreational and commercial users. Recreational users are allowed to use BLM lands similarly to users of State lands. Commercial users need a special "recreation use permit" to cross the Delta Wild and Scenic River Corridor as well as other BLM land. Commercial activities on federal lands also need to take the NEPA and the National Historic Preservation Act (NHPA) into account when considering possible impacts to the natural and cultural environment.

Projected Regional Land Users

Amount and type of recreational use and subsistence on Denali Highway lands may remain roughly the same in the near and intermediate future, with a slow steady growth in visitation, presuming conditions remain the same. A change in ease of access, such as paving the Denali Highway, will alter this situation. Tourism and in-state visitation would both experience a considerable increase (BUCY associates 1999).

Remote sensing and geophysical data recorded by the State of Alaska, BLM and mining interests indicate the potential existence of one or more large ultramafic intrusive bodies running roughly east-southeast and west-northwest across much of the region (Division of Geological and Geophysical Surveys/Bureau of Land Management 2003). These findings have generated increased interest in the mineral potential of the region, and exploration is being conducted by mining interests in the Denali Blocks to determine if any commercially viable mineral deposits exist.

Department of Natural Resources Collaboration with Bureau of Land Management

DNR and BLM are working jointly on management and resource protection issues in the Denali Highway region. DNR/DMLW and BLM Interpretation are evaluating materials for interpretive panels along the Denali Highway, and are collaborating on the writing of a pamphlet. BLM Cultural Resources has supplied DNR/OHA with background information on TLAD management issues. The two agencies have worked closely on site monitoring and survey modeling for archaeological sites in the region, and are considering several future joint monitoring and interpretation projects.

Existing Memoranda of Agreements with Bureau of Land Management

The Alaska SHPO has entered into two memoranda of agreements with BLM since 1971 regarding the management of the TLAD. In 1980 BLM signed a memorandum of agreement with the Alaska SHPO and the Advisory Council on Historic Preservation (ACHP) to regulate OHV use in the TLAD. This MOA is still in effect, but should be updated to correct imprecise wording and differences in application of the OHV restrictions between BLM and OHA.

A second MOA was reviewed and signed in 1987. This document proposed BLM actions to alleviate threats to cultural resources in the TLAD. These activities have been completed or rendered unnecessary when the boundaries of the TLAD were redrawn in 1993 (McCoy and Dodson 1994: 11).

IV. CULTURAL RESOURCE PROGRAM FOR THE DENALI HIGHWAY LANDS

OHA is responsible for monitoring cultural resources in the state's Denali Highway lands. OHA works with state, Federal and private organizations in efforts to avoid impacts to these resources. OHA works under federal authority (as the SHPO) and state authority (as the office that administers the State Historic Preservation Program) to provide information and guidance on cultural resource issues to DNR, BLM, and other management and regulatory agencies dealing with the Denali Highway lands. OHA's goal is to minimize the effect development and recreation activities might have on the cultural resources.

History of Cultural Resource Management on Denali Highway Lands

In the 1950s the Denali Highway was built between Paxson and Cantwell, opening up the Tangle Lakes area to a variety of users. Archaeological research in the region had begun by the late 1950s, and in 1971 a large section of the region (over 455,000 acres) was designated an archaeological district, and listed in the National Register of Historic Places. This work was led by Frederick Hadleigh West while at the University of Alaska, Alaska Methodist University, the University of Wisconsin and Williams College (West 1967, 1972, 1973a, 1973b, 1974, 1975, 1981, 1984, 1996).

In 1974 the Advisory Council on Historic Preservation (ACHP), a federal oversight agency, was made aware of damage to archaeological sites in the district due to the unrestricted use of OHVs. The Advisory Council requested that BLM, the land management agency in the region, reduce the size of the district and develop measures to protect the cultural resources (Bowers 1989 I-20). This prompted BLM over the next decade to do a series of archaeological surveys to locate archaeological sites in the region, and assess OHV impacts to archaeological sites (Chase 1982, Mobley and Morris 1981, Zinck and Zinck 1976). This changed the focus of archaeological work in the region from strictly academic research to one of management of the cultural resources. An Interim Management Plan was written (Beck 1979) to map out strategies for dealing with conflicts between protection of cultural resources and other uses of the area.

In 1980 BLM entered into an MOA with the Alaska SHPO and the ACHP, under the authorities of 36CFR800. This agreement set standardized archaeological testing and reporting procedures, personnel qualifications, and a two-level determination of archaeological site significance ('major' site/'minor' site) (Bowers 1989 I-22). This MOA is still in effect, though it was amended in 1987 to add archaeological mitigation of the Round Tangle Lake Campground and a section of the Yost Trail to BLM's responsibilities (Bowers 1989: Appendix C). In 1984, BLM published their decision in the Federal Register to formally limit vehicle travel in the TLAD to specific roads and trails, as per the Advisory Council's request ten years earlier (Federal Register 1984, in Bowers 1989: Appendix D). In 1993 revised documentation was submitted to the Keeper of the National Register of Historic Places, reducing the size of the TLAD from 455,034 acres to 226, 660 acres (McCoy and Dodson 1993:4).

The later 1980s and early 1990s saw additional BLM surveys and trail and area clearances, including the Yost Trail, the Round Tangle Lake Campground, and the Landmark Gap (North) Trail (Bowers 1989, Gillispie 1990, 1992). Much of the

subsequent survey has focused on sections of the TLAD away from the Tangle Lakes and Landmark Gap areas that had received little previous survey, as well as developing a database of global positioning system (GPS) data of known sites and trails (Jangala 2001, 2002).

The 2003 conveyance of Denali Block I transferred 235,000 acres north of the Denali Highway from federal to state ownership. This conveyance included the northern section of the 1993 Tangle Lakes Archaeological District. Under state control, this section is now enclosed in an area slightly larger than the 1993 archaeological district boundary called the TLAD/SUA (Figure 2). In 2003 OHA began the evaluation of cultural resources and monitoring of some of the OHV trails in Denali Block I. In 2004 an additional 117, 337 acres of land were partially conveyed from federal to state ownership in the central Denali Highway region (Denali Block II). During the 2004 field season OHA undertook projects that included the monitoring of trails, survey of previously unsurveyed trails, location by GPS and the evaluation, monitoring and mitigation of previously known sites in the Landmark Gap region, and the survey and monitoring of ice patches and other areas with high probability to contain cultural sites. In 2005 OHA continued its trail and ice patch monitoring, as well as working with DNR/DMLW on the evaluation and survey of the Glacier Gap Trail alternatives.

Human Occupation of the Tangle Lakes Region

Researchers from Alaska Methodist University, the University of Alaska, and other institutions in the 1950s, 1960s and 1970s discovered over 10,000 years of human occupation in the Tangle Lakes region. Through this time people survived by hunting animals and harvesting plants in the region. Following are the names, time periods, and a brief description of the human groups that occupied the region.

Denali Complex (Beringian/ American Paleoarctic Tradition)	10,000+ to 5,000 years ago
Northern Archaic Tradition	5,000 to 3,500 years ago
Late Denali Complex	3,500 to 1,500 years ago
Athapaskan Tradition/ Lake Prehistoric Period	1,500 to 100 years ago
Historic Period	100 years ago to present

Table 1. Cultural groups in the Tangle Lakes Region, Denali Highway.

The region was first occupied by a group whose technological tool kit has been called the Denali Complex (~10,000-5,000 years ago). These people are believed to have hunted caribou in the region, using antler spear points inset with razor-blade like stone "microblades" struck off of small microblade cores. They were followed by people of the Northern Archaic Tradition (~5,000-3,500 years ago) who, like their predecessors, hunted caribou with the atlatl and dart and flaked stone tools using material found in the Landmark Gap region. The next group in the region (Late Denali Complex: ~3500-1500 years ago) again made microblade tools. Use of the bow and arrow and native copper began in the Late Prehistoric Period (1,500-100 years ago) in the Copper River basin, along with the intensive use of Copper River salmon. Direct connection is seen between these latter people and the Ahtna Athapaskans living in the region today. Written

documentation of the area began when the Castner and Glenn parties from the U.S. Army traveled through in 1898 (Castner 1984).

Cultural Site Types and Locations

There are 152 identified cultural sites in Denali Block I listed in the Alaska Heritage Resources Survey (AHRS) maintained by OHA. There are 17 cultural sites in Denali Block II listed in the AHRS. These are the prehistoric and historic archaeological sites identified to date in these parcels. Archaeologists identified the sites by visually locating their remains on the landscape, and by sub-surface testing.

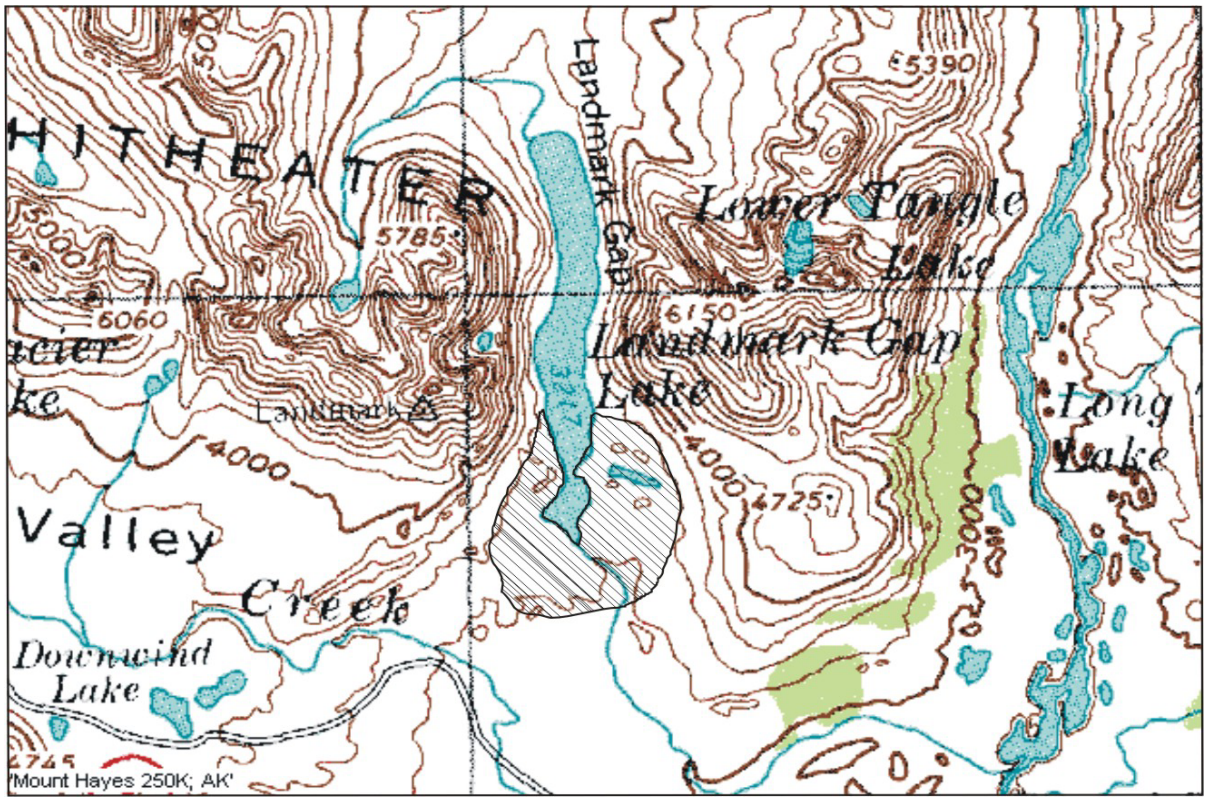


Figure 5. Landmark Gap region of Denali Block I. Hatched area has highest concentration of known archaeological sites (>90) in the Denali Blocks.

Historic sites in the Denali Blocks include cabins, equipment, and landscape modification from the early part of the last century. Prehistoric sites are more difficult to locate. They generally contain only the stone tools used by past peoples, as the organic tools (wooden spears, bark bowls, skin clothing, bone and antler tools) have decayed away. Prehistoric sites in this region are generally only visible on the surface when some action (OHV use, wind or water erosion) has disturbed and removed the soil covering the artifacts.

Prehistoric Site Locations

Prehistoric site locations in central Alaska are those places where hunting and gathering populations used the land to camp or harvest resources, and where they left evidence of their presence. Below are landforms that current archaeological and ethnographic information suggest have a high probability to contain cultural sites.

Overlook Sites

The landform in central Alaska most likely to contain an archaeological site is the overlook. An overlook can be a point of land that projects into a valley, a high point on a ridge, or merely the highest point in a region. These landforms were generally used as outlooks for game, though some served as campsites. Hunters would sit on these highpoints, refurbishing their hunting equipment and making stone tools from material brought to the site.

Lake and Stream related Sites

Prehistoric people commonly used the lake shores, outlets, and stream banks of the region. These sites could be short term hunting and fishing sites or longer term living sites, and include fire hearths and tools used for a variety of activities. Locations like stream mouths and lake narrows or outlets are likely places for fishing and related fish processing and camping to have taken place. Large lakes also tend to channel game (either around the lake or across at narrows) and give human hunters a location (in the water) where large game is slower and easier to kill.

Mountain Passes

Archaeological sites are sometimes found in or near mountain passes because the passes are natural channels for the movement of both people and animals. Many passes in the area have traditional Athapaskan trails. Passes also were ambush locations for humans hunting caribou and moose.

Alpine Ice Patches

In 1997, northern researchers discovered ice patches occasionally preserve cultural materials from past human hunters (Dixon et al., 2005; Hare et al., 2004, Kuzyk et. al., 1999). Prehistoric hunters found that caribou commonly spent the hot part of summers on alpine ice patches in the high country. They hunted the caribou there, and occasionally lost their tools on these ice patches. Because of recent warmer temperatures across the Arctic, ice patches in Alaska and the Yukon are melting, exposing arrows, darts (atlatl-thrown spears) and other items. These ice patches (or melted ice patches, that now only have a layer of caribou dung remaining) can produce important organic cultural materials not preserved in other archaeological sites.

Lithic Procurement Sites

An important type of archaeological site in Denali Block I is the lithic source. Lithic sources are locations where people would get stone that they would flake or grind into tools. Landmark Gap has one known bedrock source of flakeable stone, and recent geological data suggests that there are others in the region.

Multiple-Resource Spike Camps

Multiple-resource spike camps are locations in a region that were centrally located to use multiple resources found in the region, but were occupied for a relatively short period of time. These are known from the ethnographic literature, and are common of Athapaskan camps in high country. While usually near a lake or stream, they could be located on any piece of dry ground with water in the area. Developing a model showing likely locations for multiple-resource spike camps requires creating map layers showing past biological resources, and finding camping locations near clumped resources that allowed predictable and reliable harvesting.

History of Cultural Resource Monitoring and Survey on Denali Highway Lands

Archaeological survey on the Denali Highway in the 1950s and 1960s focused on locations near the highway and the Tangle Lakes corridor. Frederick Hadleigh West, the main academic researcher in the 1960s and 1970s, focused on the areas around the upper and lower Tangle Lakes and Landmark Gap Lake.

In the mid-1970s, the focus changed from archaeological research to cultural resources management. BLM and other agencies began surveying existing OHV trails, campgrounds and road right-of-ways, attempting to understand and document the resources and find ways to minimize impact from increased human use of the region. During this time archaeological surveys were conducted on the Landmark Gap, Glacier Gap, Maclaren, and Seven Mile Lake trails (Zinck and Zinck 1976). Multiple sites were found on these trails, with one important site impacted badly enough to force closing the north half of the Landmark Gap (North) trail (Mobley and Morris 1981). In 1977 an historic resource study was done of the Valdez Creek Mining District, included an overview of the entire Denali Highway (Dessauer and Harvey 1980). In 1979 State of Alaska Division of Parks archaeologists surveyed along the highway (McKay 1981). Six sites were discovered in the TLAD by this survey, one of which produced the only known copper artifact from the area (Bowers 1989: I-21).

BLM's focus on cultural resource management continued through the 1980s and 1990s, with survey and monitoring of trails and the mitigation of impacts on cultural sites. BLM contracted with GDM Inc. in 1989 to conduct archaeological testing and clearance of the Round Tangle Lakes Campground, and again in 1991 to conduct data recovery and mitigation of the Landmark Gap Trail Site (XMH-289), resulting in the reopening of the north half of the trail from the site to the lake for OHV use. The late 1980s also included a survey of the section of the historic Yost Trail that fell inside the 1971 TLAD boundary (Bowers 1989). BLM increased its trail monitoring in the late 1990s and early 2000s, as well as surveying new trails (Jangala 2001, 2002).

This monitoring, mitigation and data gathering to better understand and protect the cultural resources has been continued by OHA. During 2003 OHA's work included monitoring and generating GPS maps for the four OHV trails in the TLAD/SUA (Landmark Gap [North] Trail, Glacier Gap Trail, Maclaren Summit Trail, and a section of Seven Mile Lake Trail). The work also included monitoring of ice patches in the region for cultural materials (see Alpine Ice Patches, page 15). Substantial organic cultural materials were found (wooden arrows, antler points, and birch bark). The OHA 2004 field season included monitoring of the Denali Blocks' trails, including the historic

Yost Trail, and additional mitigation of the Landmark Gap Trail Site. Other activities included relocating and GPS recording of 23 archaeological sites southwest of Landmark Gap Lake, and discovering 10 new sites in the area. Monitoring of ice patches in the region recovered three lithic projectile points, an arrow or dart shaft fragment, and a probable atlatl. Similar monitoring of trails and ice patches was done in 2005.

Almost all of the archaeological surveys done in the Tangle Lakes region in the last 40 years were done near the Tangle Lakes, the Denali Highway, Landmark Gap Lake, or one of the OHV trails in the region. This means that few areas away from these features have been surveyed. Less than 10 % of Denali Block I has been archaeologically surveyed at a reconnaissance level. Less than 1% of the Denali Block II parcels have seen reconnaissance level survey.

Most of the remaining BLM acreage along the Denali Highway has been selected by the State of Alaska. Transfer to the State is scheduled for completion by 2009. Thus within five years many hundreds of thousands of acres of additional land in this region is slated to come under state control, and almost none of it has been archaeologically surveyed.

The Importance of Updated Survey Strategies and Landscape Histories

Researchers are constantly learning more about how people used past landscapes. Archaeological survey in the Denali Highway region requires a strategy delineating areas that have a high probability for finding sites and areas that do not. Bowers (1989:II-15) attempted to do this by created a map that blocked out higher elevation areas (above 4000 feet) in the TLAD as not needing to be surveyed. This was an early attempt to make a determination of at least where survey wasn't necessary. More recent archaeological and ethnographic information has changed our awareness of how prehistoric peoples used higher elevations. In the last decade archaeologists have learned that many ice patches in Alaska and the Yukon contain well preserved organic hunting tools. Using this information, OHA archaeologists found five ice patch archaeological sites in areas above 4000 feet during monitoring activities in 2003 and 2004.

Archaeologists surveying in the Denali Highway region should use current archaeological and ethnographic data and a well developed Holocene landscape history. The landscape has in some cases changed considerably in the last 10,000 years, with the draining of lakes and the changing courses of streams. A large "Greater Tangle Lake" (also called "Ancient Tangle Lake": Campbell 1993), existed in the southern Tangle Lakes region in the early Holocene and was used by Denali Complex peoples. This lake partially drained sometime after 8,000 years ago, leaving a fossil shoreline and bathtub ring of archaeological sites approximately 50 feet above the current upper Tangle Lakes. This shows us that we cannot rely only on modern landforms to represent how things were in the past, and illustrates the importance of developing a landscape history of the region before prioritizing areas for their importance in past human use. Any archaeological survey strategy must be reviewed and updated periodically and incorporate new archaeological, ethnographic and landscape history information.

V. POTENTIAL ADVERSE IMPACTS TO CULTURAL RESOURCES ON DENALI HIGHWAY LANDS

There are numerous activities that could affect the cultural resources on Denali Highway lands. These activities include OHV use, erosion, vandalism, developmental impact, ice patch melting, and general use of the region by the public. The cultural resources of this region are vulnerable. The majority of them are archaeological sites that are very shallowly buried or exposed on the surface. The soil deposits are very thin in much of the Denali Highway region, with many areas having 30 centimeters (12 inches) or less of soil overlying glacial gravels. Thus archaeological sites are easily disturbed or destroyed by various ground disturbance processes.

In 1984 BLM implemented restrictions limiting OHVs to designated trails in the TLAD due to OHV damage to archaeological sites. Archaeological materials exposed by natural or human-induced erosion then become vulnerable to unauthorized collection.

Human Disturbance Factors

Off-Highway-Vehicle Use

The primary human ground-disturbing factor in the TLAD has been OHV use. OHVs make ruts, eroding soil and exposing artifacts. Loss of ground cover also encourages cryoturbation, churning up archaeological deposits and destroying stratigraphic context.

Early OHVs used in the region included four-wheel drive highway vehicles, tracked hunting vehicles, and tracked dozers. Some of the drier trails in the region, like the Maclaren Summit Trail (Figure 6) and the Landmark Gap Trail (Figure 8), appear to have been pioneered by four-wheel drive vehicles. Wetter trails, like Seven Mile Lake Trail (Figure 7) and Glacier Gap Lake Trail (Figures 8 and 9), may have been pioneered by tracked rigs, and later used by four-wheel drive vehicles. Other trails, including some south of the Denali Highway, were blazed before formation of the TLAD by local residents using dozers, generally to provide access to areas for fishing and hunting.

Most OHV activity on Denali Highway lands is on existing OHV trails, (from east to west) the Landmark Gap Trail, the Glacier Gap Trail, and the Maclaren Summit Trail. The first one-third mile of the Seven Mile Lake is in the TLAD/SUA, and the rest of the trail in Denali Block I. Other OHV trails exist in Denali Blocks I and II, including the historic Yost Trail (Figure 10) in the Eureka Creek drainage of Denali Block I, numerous trails in the historic mining district in Denali Block II East, and the Butte Creek Trail in Denali Block II West. While four-wheel drive highway vehicles are used on some trails like Landmark Gap Trail, smaller one-person OHVs are the main vehicles used on other trails. Archaeological sites are particularly threatened by OHV use where trails are braided at wet locations and when new trails are created. Both Glacier Gap Trail and Seven Mile Lake Trail have braided sections where wet peat deposits cause users to pioneer new trails around mud holes to stay on solid ground. Glacier Gap and Landmark Gap trails have short trails pioneered off their ends. The challenge to DNR management is to have useable trails that serve the public needs, and to discourage users from pioneering new routes.

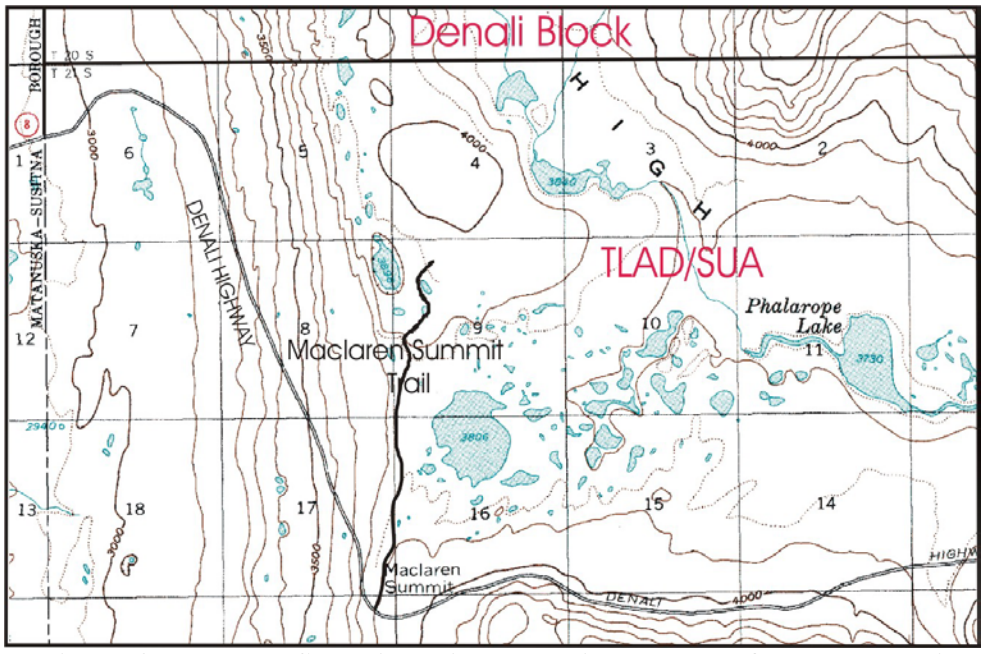


Figure 6. Maclaren Summit Trail. The trail runs north from the Denali Highway approximately 2.3 miles, and lies completely within the TLAD/SUA. Trail is from a trackway recorded in 2003 by a Garmin Map 76S GPS unit. An additional ~250m extension was discovered to have been pioneered by August 2005.

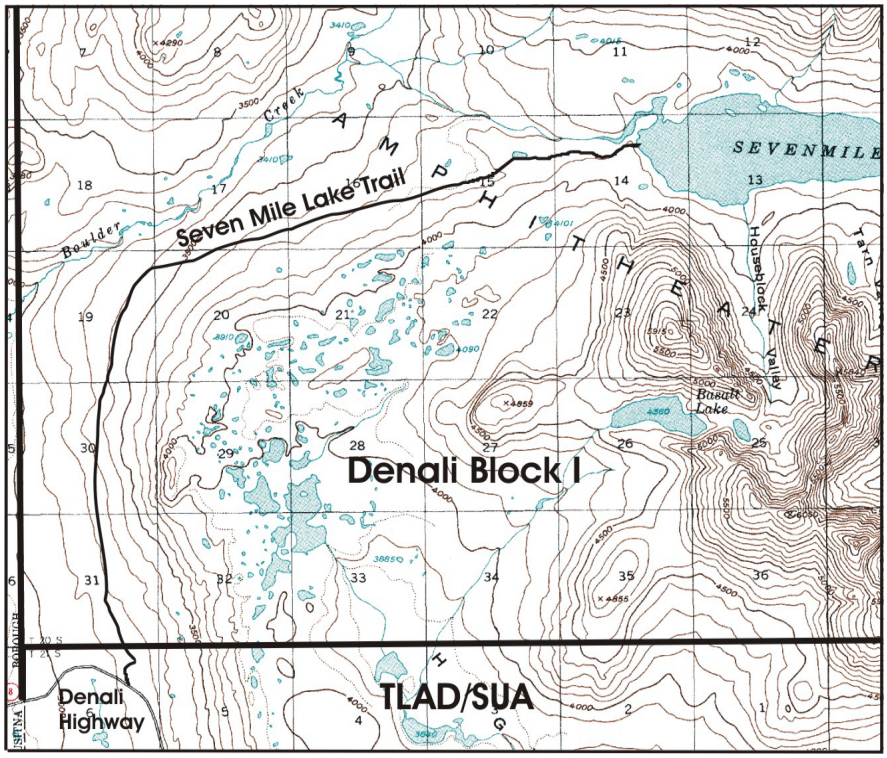


Figure 7. Seven Mile Lake Trail. The trail progresses north and east from the Denali Highway 7.5 miles to Seven Mile Lake. The trail travels approximately .3 miles/.6 km through the TLAD/SUA and then through Denali Block I to the lake. Trail from trackway recorded in 2003 by Garmin Map 76S GPS unit.

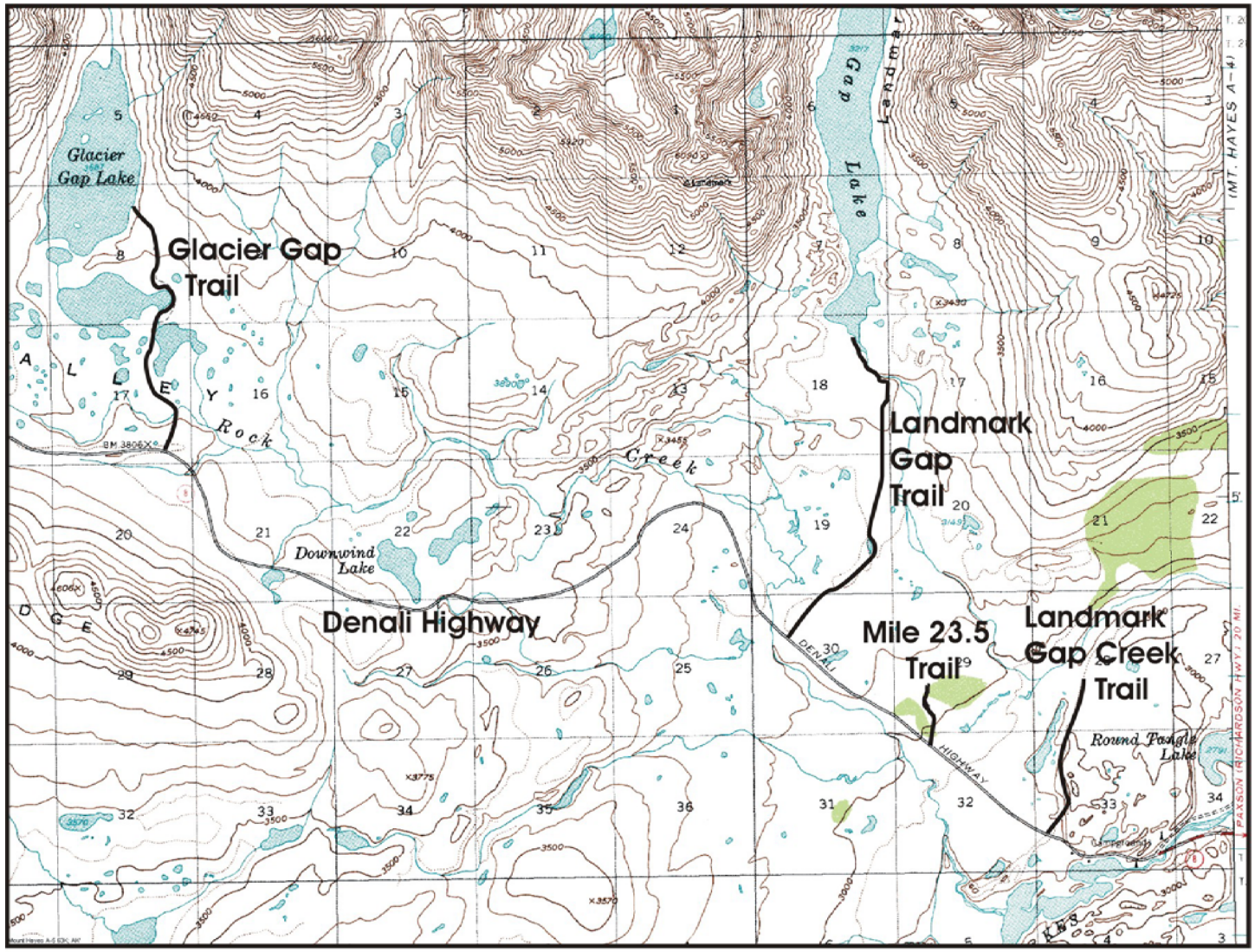
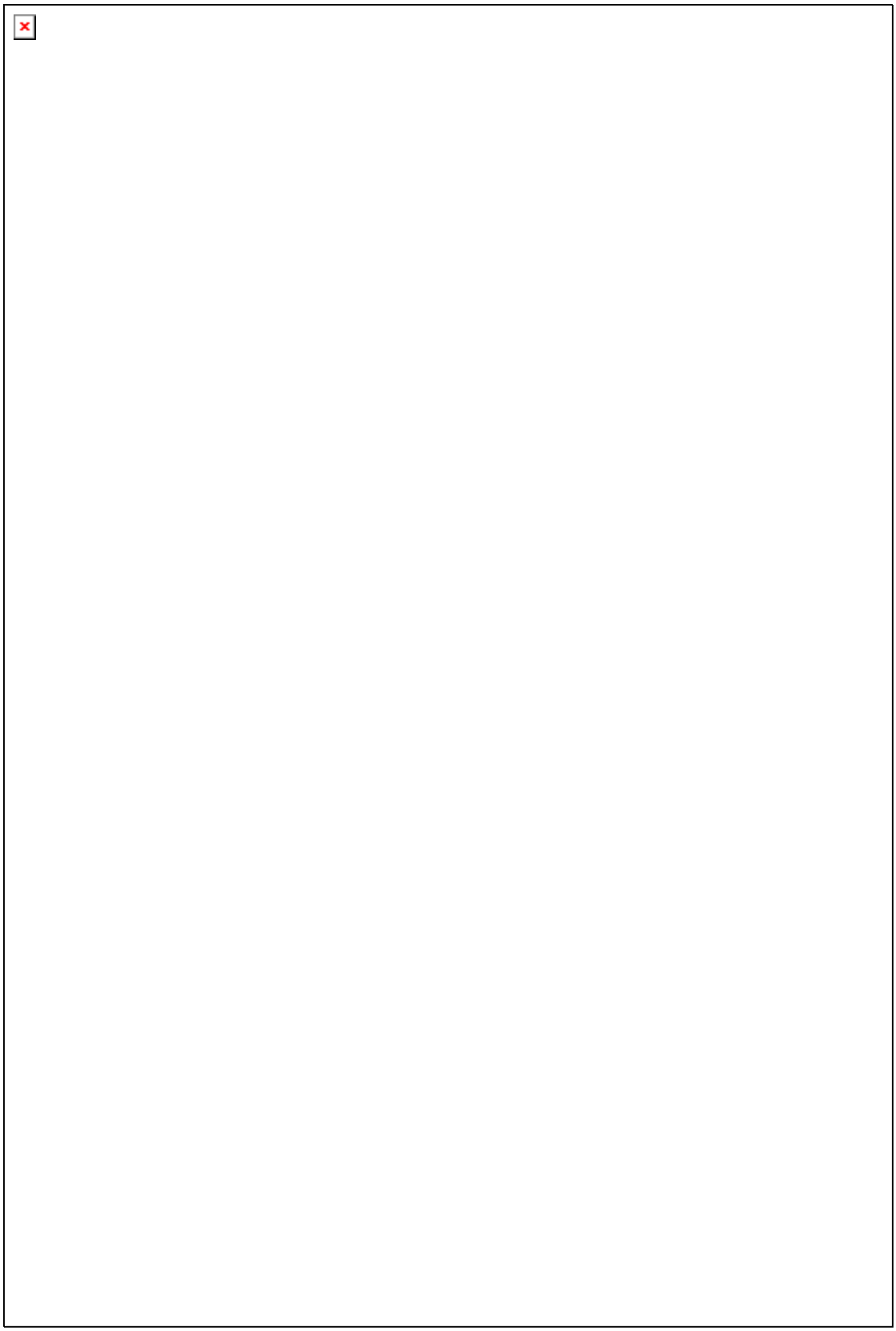


Figure 8. OHV trails, Mile 22 to Mile 31, Denali Highway. The "Mile 23.5 Trail" and "Landmark Gap Creek Trail" are unauthorized OHV trails.



Preliminary Draft
Figure 9.

Trail Name	Map Quad	Block Location	Trailhead Location	Trail Length	RS2477 Trail	NatReg Status/ Date	Archaeo. Surveyed /Cleared	Trail Conditions and Concerns	Recommendations
Landmark Gap (North) Trail	Mt. Hayes A-5	TLAD/SUA, in Denali Block 1	Mile 24.7 Denali Highway	2.4 miles	No	NDE	Yes/Yes	Erosion on Landmark Gap Trail Site; several braided mudholes: newly pioneered trails on side and end.	Lay geomat or other over trail at LGT Site and cover w gravel to stop site destruction.
Glacier Gap Trail	Mt. Hayes A-5	TLAD/SUA, in Denali Block 1	Mile 30.6 Denali Highway	2.25 miles	Pending	NDE	Yes/Yes	Braided marshy sections, esp. mile 1-2; .3 mile unauthorized trail extension.	Archaeologically survey areas near rerouted trail.
Maclaren Summit Trail	Mt. Hayes A-5	TLAD/SUA, in Denali Block 1	Mile 36.8 Denali Highway	2.2 miles	No	NDE	Yes/Yes	Solid gravel bottom. Gradual pioneering at end of trail.	Construct turn-around loop at end of trail or extend trail out of SUA, &survey.
Seven Mile Lake Trail	Mt.H. A-5	TLAD/SUA & D. Bk. 1	Mile 39.7 Denali Highway	7.5 miles	No	NDE	Yes/Yes	Braiding at marshy sections.	Arch. survey any rerouted trail.
Landmark Gap Creek Trail	Mt.H. A-5	TLAD/SUA, in D. Bk. 1	Mile 22.2 Denali Highway	1.6 miles	No	NDE	Yes/No	Unauthorized trail; crosses several archaeological sites.	Close trail to OHV use.
Mile 23.5 Trail	Mt. Hayes A-5	TLAD/SUA, in Denali Block 1	Mile 23.5 Denali Highway	640m	No	NDE	Yes/Yes	Unauthorized, unsigned trail. Trail closed in 2005.	Continue monitoring.
Rusty Lake Trail	Mt.H. A-4	TLAD/SUA, in D. Bk. 1	Mile 17.4, Denali Highway	Approx. 1 mile	No	NDE	Yes/Yes	OHV trail cleared by BLM in 1990s. Poorly marked at trailhead and in spots.	Work with DNR Lands
Yost Trail	Mt.H. A-4,5 B-4,5	Denali Block 1	~Mile 221, Richardson Highway	~18 miles,10 in DBI	No	NRJ (Rejected) 6/8/87	Yes/Yes	Braided sections; locations with high archaeological potential near trail.	Work with DNR Lands
Rainy Creek Trail	Mt.H. B-4,5	Denali Block 1	~Mile 228, Richardson Hwy	>17 miles	No	NDE	No/No	Unknown; appears 1.5 lane gravel road from air.	Archaeologically survey.
Paxson/Denali Trail	Healy A-1,2 Mt.H. A-6	Denali Bk 2, State Selected Land	Mile 44, Denali Highway	40 Miles	Yes	NDE	No/No	W. 14 miles is gravel road; condition of trail east of Roosevelt Lake is unknown.	Section east of Roosevelt Lake needs arch. survey.
Windy Creek Trail/Access Road	Healy A-1	Denali Block 2	Mile 78, Denali Highway	16 miles	Yes	NDE	No/No	Unknown; said to be improved cat trail.	Archaeologically survey.

Table 2
Cultural Resource Management Considerations for Trails on State lands in the Denali Highway Region.
(NDE= No Determination of Eligibility determined for the National Register of Historic Places.)

Glacier Gap Trail

DNR/DMLW personnel in 2004 worked with National Park Service (NPS) trail specialists to map the Glacier Gap Trail (Figure 9) and consider upgrade alternatives. Workers surveyed the region, and mapped and flagged three alternative routes from the Glacier Gap trailhead to the trail terminus at the cabin at Glacier Lake. One trail option is to improve the existing trail, requiring the hardening of a long stretch of swampy ground. A second alternative is to relocate the trail to the foot of a glacial moraine that runs to the east of the existing trail. A third alternative is to only relocate the last half of the trail around the swampy area. Option three requires avoiding a known late prehistoric site on top of the esker above the proposed trail. Options two and three required an archaeological survey of the proposed new trail routes, which was done in 2005.

Rusty Lake Trail

An OHV trail located within the TLAD/SUA runs from Mile 17.4 of the Denali Highway north to Rusty Lake. This trail was archaeologically cleared in the 1990's by BLM archaeologists as a goodwill gesture toward lodge owners in the region, who wanted motorized access for fishing in Rusty Lake. A walking survey performed by OHA personnel in 2003 along the highway and then to and around Rusty Lake showed no distinct trail still in existence. In 2004 DNR/DMLW personnel were shown where the trail had left the highway by one of the lodge owners, with little evidence left of the former trail (Darcy Harris, personal communication 2005). In 2005 DNR/DMLW and OHA personnel walked the trail to Rusty Lake. The trail is flat, with little elevation gain. Some sections near Rusty Lake may need hardening, and other sections require better trail marking.

Newly Pioneered OHV Trails in the Tangle Lakes Archaeological District/ Special Use Area

New OHV trails in the TLAD/SUA exist along Landmark Gap Trail, Glacier Gap Trail, and at two locations on the north side of the Denali Highway between the Tangle Lakes Lodge and the Landmark Gap (North) trailhead. The "Mile 23.5 Trail" (Figure 8) is a 700m long trail pioneered north from a pull off on the highway at Mile 23.5. After consultation with DNR/DMLW it was decided that the pull off should be left available for use but the trail should be closed. DNR/DMLW worked with Alaska DOT to have the trail blocked by boulders.

The "Landmark Gap Creek Trail" (Figure 8) is an OHV trail that leaves a gravel pit at Mile 22.2, in the BLM Delta River Wild and Scenic River Corridor, and goes north 1.7 km into the TLAD/SUA. Consultation is ongoing with DNR/DMLW and BLM to decide whether to close this trail or whether it should be reopened as a walking trail. Any option other than trail closure will require OHA involvement.

RS2477 Trails on Denali Highway Lands

Some trails on Denali Highway lands are designated as RS2477 trails: that is, they are trails that grant an historic right-of-way for use. The main one of these is the Paxson-Denali RS2477 Trail, which follows the existing Denali Highway for its easternmost 44 miles. It then turns north and west, crossing the Maclaren River and Clearwater Creek, and cuts through the Pass Creek Valley into the Valdez Creek drainage, which it follows

to the Denali Highway. The western 20 miles of this trail lie in Denali Block II, with all but the four miles of trail east of Roosevelt Lake passable by four-wheel-drive highway vehicles.

The Windy Creek Access Road RS2477 Trail leaves the Denali Highway at Mile 78 and extends north and east 16 miles up the Windy Creek Valley to Wedding Pass. All of this trail, which allows access to mines in the upper Windy Creek Valley, is inside Denali Block II.

The Glacier Gap Trail has been nominated as a potential RS2477 right-of-way. This entire trail lies in Denali Block I. DNR is evaluating the trail and considering improving the existing trail or moving it to dryer ground (Figure 9).

The RS2477 process is still ongoing in the State of Alaska. Denali Highway lands like Valdez Creek and Eureka Creek that have seen mining and other uses for the last century may have other RS2477 eligible trails. It is probable that as more of the Denali Highway lands are considered for increased mineral and other development, some users will request RS2477 designation on additional trails. These routes need archaeological survey.

The Yost Trail

The Yost Trail historically linked the Yost Roadhouse on the Valdez-Fairbanks Trail (now the Richardson Highway) to the town of Denali near the Susitna River. A section of this trail is still visible, stretching from Phelan Creek on the Richardson

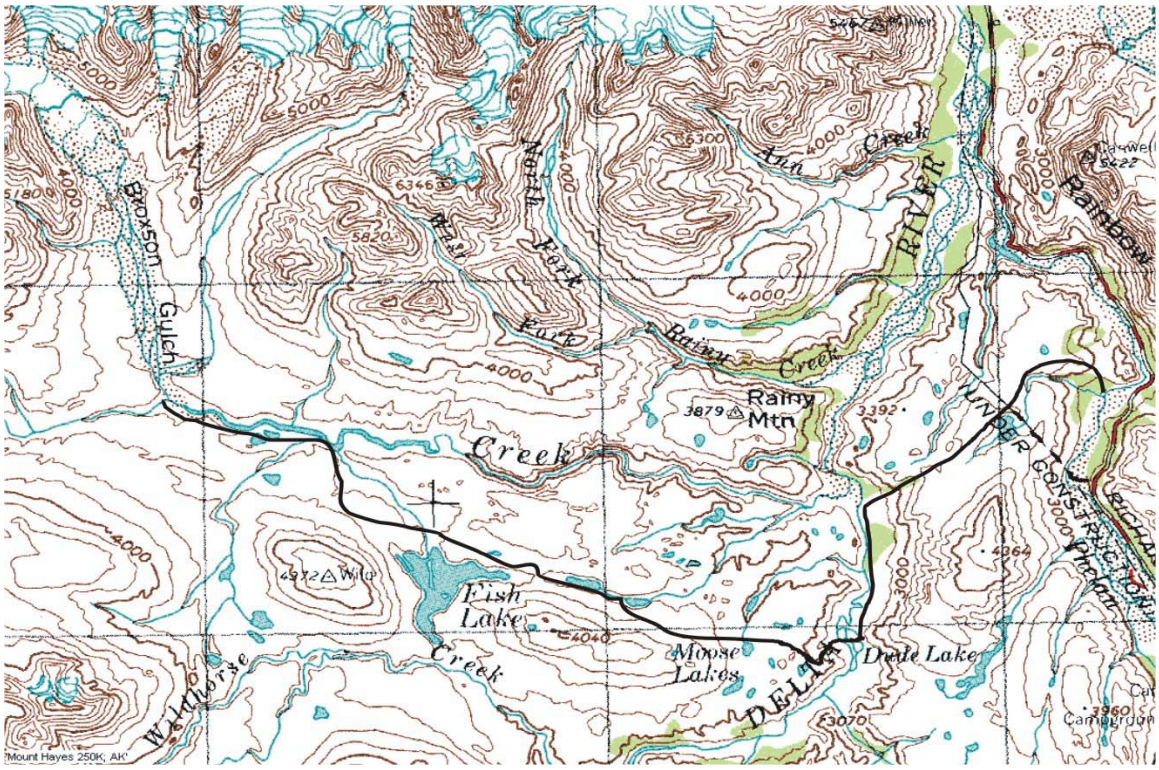


Figure 10. Yost Top-of-the-World Trail. Trail is still visible in the field, and passable from the Richardson Highway to Broxson Gulch. Current access to trail is from Trans-Alaska Pipeline corridor (dashed line).

Highway approximately 25 miles to Broxson Gulch in the Eureka Creek drainage (Figure 10). This trail has been periodically used by hunters and miners accessing upper Eureka Creek and Broxson Gulch. The Yost Trail crosses the BLM Delta Wild and Scenic River Corridor, but is open for general OHV use across the corridor, provided that users stay on the trail. Although beaver dams have flooded the trail route across the Delta River Valley, most of the trail is in fair to good condition. No known cultural sites in the Yost Trail would be impacted by increased use (one site in the trail was mitigated in 1988), but increased use of the trail would bring known sites, and areas with high site potential near the trail, into higher public use. The Yost Trail is currently not a listed RS2477 trail, but it may qualify as one due to apparent periodic use since the early 20th century.

Resource Extraction on Denali Highway Lands

Mining operations are ground-disturbing activities. Mine portals, open pits, tailings storage facilities, employee facilities, mill sites, new roads, test pits, etc. and associated effects of increased road traffic and new OHV trails, must take into account effects on cultural resources in the region.

Other Commercial Development

Commercial development on Denali Highway lands may include guiding, lodges, and other operations. When considering the possible environmental effects of these operations, their possible direct and indirect impacts on cultural resources must also be taken into account.

Road Modification or Development

Any soil disturbance, including changing alignments of existing roads, putting in new roads, and beginning or expanding material sources, has the potential to damage or destroy archaeological sites. Any proposed road-related ground disturbance needs to be reviewed for potential effects on archaeological sites, and archaeological survey might need to be done before construction.

Artifact Collecting on Denali Highway Lands

The lack of public awareness and appreciation for the cultural and archaeological resources on Denali Highway lands threaten the cultural resources. It is against the law to collect artifacts on state land. Human impacts to the cultural resources of the Denali Highway region can be reduced by encouraging visitors to be good stewards of those resources. This can be accomplished by increasing public awareness of the personal and social value of cultural resources, the susceptibility of those resources to human impacts, and how these impacts can be minimized with restrictions and laws related to protecting those resources (BUCY Associates 1999). Information can be presented to the public through displays, pamphlets and video productions available at local lodges, interpretive panels, and possibly public programs offered periodically.

Natural Disturbance Factors

Site Effects Caused by Natural Erosion

The natural erosional effects of wind and water impact numerous archaeological sites in the Denali Highway region. The Zinck and Zinck report (1976) has noted that 40% (N=72) of the sites they examined in the TLAD were affected by wind or water erosion. OHA's 2004 monitoring in the Southern Landmark Gap region found considerable wind erosion, down-slope movement of flakes, and human impact from foot traffic at some of the sites. The site most impacted by stream erosion in the TLAD/SUA is XMH-403, a site located on the stream edge of a pull-off on Landmark Gap Trail near Landmark Gap Lake. The erosion in this case is from a combination of rain and stream erosion coupled with foot traffic to the stream.

Melting of Regional Ice Patches and Cirque Glaciers

Ice patches are locations where caribou congregate in the summer to cool off and escape insect predation. Hunters in the past looked for caribou, sheep and other animals in these locations. Artifacts, such as darts and arrows, made from organic materials, were lost on these ice patches, and preserved within the ice. Canadian research shows that ice patches frozen for thousands of years have been rapidly melting since the early 1990s.

OHA's research designs over the last three years have included monitoring multiple ice patches in the Denali Blocks. Ice patches surveyed in 2003 in the western Amphitheater Mountains produced two arrow shafts and two antler points, as well as worked antler and fragments of birch bark. Monitoring in the same region in 2004 recovered a fragment of arrow or dart shaft and three lithic points; all recovered from caribou dung where an ice patch had melted. Survey of ice patches in the eastern Amphitheater Mountains in 2004 recovered a wooden shaft that may be an atlatl (spearthrower), the first recovered from the boreal forests of North America (Figure 11). These recovered items illustrate the possibility of finding cultural material in receding or former ice patches, and highlight the importance of monitoring the ice patches and related cirque glaciers now, as they are rapidly melting away.

Figure 11. Delta River Ice Patch No. 5. This ice patch, seen here in 2003, had completely melted away by 8/31/04, when OHA personnel recovered a possible atlatl from atop the remaining caribou dung. Caribou dung is visible on lower sections of ice patch. Ice patch is located on mountaintop west of Lower Tangle Lake at approx. 5350' elevation.

VI. RECOMENDATATIONS FOR MANAGING AGENCIES AND COMMERCIAL ENTITIES REGARDING CULTURAL RESOURCES ON DENALI HIGHWAY LANDS

Consideration of Cultural Resources in Denali Highway Projects

The State of Alaska holds cultural resources in trust for its population, just as it does its natural resources. Unlike some natural resources, cultural resources are non-renewable. Like natural resources, cultural resources must be considered when planning projects and developing budgets. Cultural resource identification and evaluation should occur early in project planning. The possible impacts to cultural resources should be assessed, allowing projects to be implemented that will minimize adverse affects on those resources.

Information on where the cultural resources are and what they consist of is important to land managers in making informed decisions on the management of resources on Denali Highway lands. The OHA has compiled a list of known cultural resources in the region, and put that information in tabular form to help manage Denali Block resources. This cultural information is incomplete, however, because of the limited archaeological survey that has been done in the region. Less than 10% of Denali Block I and 1% of Denali Block II have been surveyed for cultural resources. Early research data is often incomplete, and lacks precise location information because of the methodology and technology available at the time. Further archaeological survey is called for in the Tanana Basin Area Plan (DNR 1991:2-6). Archaeological survey should be a planned, ongoing activity, and not conducted piecemeal.

In the Denali Highway region, early assessment of impacts to the cultural resources will allow planners to implement strategies that avoid or minimize impacting those resources. It is generally more economical to avoid impacting cultural resources than to attempt to mitigate adverse effects to a cultural site. Trail or road planning or mining staging and extraction areas in the region should attempt to avoid areas with known sites or which have a high probability for undocumented sites to exist.

Roads, trails and camp sites should be situated to avoid direct and indirect impacts to cultural sites and to direct users away from sensitive areas. Existing OHV trails that traverse swampy areas and are causing users to pioneer new routes should be rerouted or hardened to limit users to the trails. Long trails without pre-established camp sites encourage users to pioneer camp locations that may be detrimental to cultural resources. State constructed camp sites must be appropriately located to avoid impacting cultural resources and not place users so close that they either purposefully or inadvertently do so.

The Process for Instituting Ground-Disturbing Activities on Denali Highway Lands

Any ground-disturbing activity on Denali Highway lands has the potential to affect the cultural resources of the region.

All parties would benefit from an annual meeting held before the field season to discuss activities in the Denali Highway region. OHA could be informed of projected activities in the region, and could advise DMLW and commercial entities on ways of avoiding or minimizing adverse effects to cultural resources.

Consultation between the land managing agency and State Historic Preservation Office (SHPO) should involve the applicant at each step of the process, to avoid

unnecessary delays due to communication gaps. Following are steps that should be followed:

Identify and Evaluate Cultural Resources

Before any ground-disturbing activity takes place on Denali Highway lands the State or Federal agency permitting the project should contact the Alaska State Historic Preservation Office (SHPO) office at OHA to consult on the potential for impacting cultural resources in the project area. At a minimum a letter should be sent to OHA describing the project, and include documentation giving its location on United States Geological Survey (USGS) 1/63,360 topographic maps. Large or complex projects may also require a meeting with OHA personnel.

The Alaska Historic Resources Survey (AHRS) database should be checked, to identify any reported cultural properties in the project area. The AHRS is a statewide database containing records of historic or prehistoric sites with locations recorded on USGS maps.

SHPO recommendations for archaeological surveys are based on the following factors: (1) the degree and type of ground disturbance the project will produce; (2) the potential for prehistoric or historic resources to be present; and (3) the occurrence and quality of previous archaeological investigations in the area.

Certain types of geophysical testing, such as the use of remote sensing or the taking of very small surface soil samples, involve only limited ground disturbance. These activities have a low potential for impacting cultural resources, and the SHPO will not request a survey in these cases. Small core diameter drilling operations may not require a survey, unless they are in an area with known cultural resources or with the high probability for cultural resources like the TLAD.

Areas in the Denali Highway region that contain a high potential for cultural resources include: overlook locations; areas near past or present lakes, lake outlets and streams; lithic procurement sites; mountain passes; areas with past or present ice patches; or areas of bunched resources (see p. 15-16). If an area has a high potential for cultural resources, the SHPO reviews previous archaeological investigations in the area. If not enough or inadequate information is available on the cultural resources of the region, the SHPO may recommend that an archaeological survey be done of the area impacted by the project. Regional cultural resources information may be considered inadequate if there has been no previous survey, if the information is old, or if locational information is inaccurate due to old technology. Very little of the State of Alaska has been archaeologically surveyed. Surveys conducted before GPS instruments became commonly available may have inaccurate locational data. Archaeological survey reports written before photocopy machines became economical to use often have poor or no maps at all.

Personnel selected to conduct the survey must meet qualifications that conform to the Secretary of Interior's Professional Qualifications Standards for archaeologists (36 CFR 61).

Agency personnel are to submit to the SHPO determinations on the significance of reported cultural resources evaluated in the project area. The significance of the cultural resources is based on eligibility for inclusion in the National Register of Historic Places. To be eligible for the National Register the cultural resource must be (A)

associated with a historic event, (B) associated with an historic person, (C) embody distinctive characteristics of construction design, method, or period, or (D) have yielded, or may be likely to yield, information important in prehistory or history.

Assess Potential Impacts of Undertaking

If there are significant cultural resources in the project area, then agency and SHPO personnel determine if the project will affect those cultural resources. The agency and applicant are to consult with the SHPO on the possibility of adjusting the project to avoid or minimize adverse effects on cultural resources.

Mitigating Adverse Effects

If it is not practicable to avoid adverse impacts to cultural resources, then mitigation will be required. Mitigation may include data recovery through archaeological excavation and/or education of the public through the development of interpretive signs, brochures, or presentations to local audiences. A memorandum of agreement may need to be developed.

Federal Permitting of Projects: The Section 106 Process

Any activities that require permitting by a Federal agency, such as the Environmental Protection Agency or Corps of Engineers, or is federally funded, must comply with the National Historic Preservation Act (NHPA). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on cultural resources, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. The Section 106 process mandates federal agencies to consult with the SHPO on cultural resources within the Area of Potential Effect (APE) of a proposed undertaking. The historic preservation review process mandated by Section 106 is outlined in regulations "Protection of Historic Properties", and codified at 36 C.F.R. 800.

For an outline of the process agencies should follow in dealing with cultural resources, and for OHA/SHPO contact address and telephone numbers, see Appendix: "Cultural Resource Management Checklist".

VII. RECOMMENDATIONS FOR OFFICE OF HISTORY AND ARCHAEOLOGY'S RESPONSIBILITIES ON MANAGING CULTURAL RESOURCES ON DENALI HIGHWAY LANDS

OHA's management goals for the Denali Highway lands include protecting the resource by continued trail and site monitoring, consultation and coordination with State, Federal and other agencies, mitigation of sites, increasing management information through archaeological survey and landscape history, and improving public outreach and public access on the lands of the Denali Highway.

Managing Cultural Resources on Denali Highway Lands

Monitoring Sites and Trails

A primary responsibility for OHA is continued monitoring for impacts to the cultural resources on Denali Highway lands, and to minimize these impacts. This requires regular checking of trails and cultural sites, especially those located near areas of intense public use.

A trails management plan should be established by DNR/DMLW. OHA should work with DMLW on trails management, enabling DNR to serve the public need for more access while protecting the cultural resources of the region. The plan should specifically address the OHV trails in the TLAD. The TLAD is an Archaeological District listed on the National Register of Historic Places, and will be largely administered by the State after final land transfers are complete in 2009. Trails management will require collaboration on a number of trail-related activities, including monitoring trails in the TLAD, management of trail improvements, archaeological clearance of unsurveyed RS2477 trails, possible closure of unauthorized trails, and development of new trails.

Archaeological sites in the Denali Highway region typically are shallowly buried, and human use causes periodic exposure of cultural resources. This is especially true in the TLAD.

A variety of trail improvement and site mitigation measures are now practiced within the state. An evaluation of these measures should be undertaken with DMLW to utilize the most appropriate techniques for the TLAD and Denali Highway lands. A high priority for OHA will be to work with DNR/DMLW on the improvement of the Glacier Gap Trail. Trail improvements on Glacier Gap may include the rerouting of trails and trail hardening methods. The proposed Alternatives 2 and 3 called for trail rerouting (see Figure 9) requiring an archaeological survey, which was performed in 2005.

Archaeological surveys should be conducted on the RS2477 trails on state lands along the Denali Highway not already surveyed. This includes the Windy Creek Trail and the section of the Valdez Creek Trail that lies between Roosevelt Lake and the eastern boundary of Denali Block II, as well as any trails in the future that are deemed RS2477 eligible.

The "Landmark Gap Creek Trail" leaves a gravel pit at Mile 22.2 in the BLM Delta River Wild and Scenic River Corridor, and extends north into the Denali Block. This trail should be closed to OHV use as it traverses several archaeological sites. Extension of the trail may impact additional sites. Converting the trail to a walking trail is an option, with a possible extension connecting it with the esker-top trail west of the

Round Tangle Lake campground. When evaluating this option, consideration must be given to the possible effects foot traffic and artifact collecting may have on the surface sites in the region. Collaboration between DNR and BLM will be necessary on trails in the areas adjacent to the Federal Delta and Gulkana Wild and Scenic River Corridors.

Newly pioneered trails may require closure to OHV traffic. The "Mile 23.5 Trail", located at approximately Mile 23.5 of the Denali Highway, was of concern because continued pioneering of the trail could extend it into an area where it impacts cultural sites. This trail was closed in 2005.

Monitoring needs to continue on the ice patches and cirque glaciers that continue to melt. Cultural material melting out of this ice is relatively fragile and short-lived, and must be recovered soon after exposure. Time is critical, as many of the ice patches are almost completely melted.

Inter- and Intra-agency, Tribal, and Commercial Coordination and Consultation

The primary concern of OHA is protection of cultural resources on State of Alaska lands. OHA consults with state and federal agencies, commercial interests, and others to assess the effects of actions on the cultural resources of a project area, as well as minimizing and mitigating of the potential impacts of these projects. OHA will continue providing interested parties seeking permits, leases, or advice with information and recommendations for best management of the cultural resources on Denali Highway lands.

Effective management of the cultural resources along the Denali Highway requires the coordination of all landowning and regulatory agencies in the region, including Ahtna Incorporated, DNR/DMLW and BLM. Coordination with DNR/DMLW on trails development has been noted above. Coordination with Ahtna Inc. and regional non-profit Native groups will facilitate the dialogue that OHA has started with regional groups concerned with the cultural resources on Denali Highway lands.

The 1980 MOA between BLM and OHA requires updating to correct wording and resolve differences in state and federal application of the OHV restrictions.

Several joint projects could be conducted with BLM that would benefit management of the cultural resources of the region. These include a joint survey of the Amphitheater Mountains along the Denali Block/BLM Wild and Scenic River Corridor boundary for additional argillite lithic sources; monitoring and testing of sites around the Delta River Falls, which may contain a 10,000 year record of use as a portage; GIS modeling of Greater Tangle Lake, recreating prehistoric landscape use and creating public interpretation panels and other products; and dating of regional bluff and lake deposits, in an effort to ascertain the date for the draining of the massive Glacial Lake Ahtna.

Mitigation

Cultural sites that are in danger of destruction through either human or natural disturbance factors should be protected, if practicable, from these impacts. If it is not practicable to protect a site through avoidance, protective coverings, trail re-routing, or other non-obtrusive means, then the site should be mitigated through data recovery, where an effort is made to recover the cultural information present in the site.

A site in need of mitigation in the TLAD/SUA is XMH-403, which has been adversely impacted by stream erosion and foot and vehicle traffic. This site contains cultural material eroding out of a stream bank. Archaeological excavations should be conducted on the eroding bank, with a surface treatment applied to the stream bank to eliminate further erosion.

Archaeological Survey and Landscape History

Efforts should continue on the location and GPS documentation of known sites in the TLAD, especially of sites in the lower Landmark Gap Lake region.

Areas on state land throughout the Denali Highway region with a high probability for containing sites should be archaeologically surveyed, allowing appropriate management and protection of those resources. The predictive model used in developing survey strategies should be periodically reviewed and updated to reflect current knowledge in the field.

Landscape histories should be determined for the Rock Creek Flood Fan, located south of Landmark Gap Lake, and the relic drainage on the eastern side of Seven Mile Lake. Both of these geomorphic features provide evidence for different environments in the past that may have offered desirable campsites to prehistoric hunters. The Rock Creek Flood Fan may indicate both the presence of a much larger Glacier Gap Lake, and the catastrophic draining of that lake. If the Rock Creek Flood Fan can be dated, and proves to have been a Holocene event, its flood may provide a possible mechanism for having triggered the catastrophic draining of Greater Tangle Lake. The deeply incised Wildhorse Creek drainage appears to have been the former outlet of Seven Mile Lake, making the eastern end around the former outlet a desirable camping area and worthy of survey.

Public Outreach and Education

Public outreach and interpretation is very important in the Denali Highway region, especially since Denali Block I contains the TLAD, which is listed in the National Register of Historic Places. The public should be educated on the prehistory of the region, the fragility of the resources, and the laws protecting those resources. This information would increase the public's enjoyment and appreciation of the prehistory, and encourage better stewardship archaeological sites. A pamphlet OHA has in process on the cultural resources on state lands along the Denali Highway should be completed and distributed to the public at area lodges and other outlets. Work should be coordinated with DNR/DMLW, DNR/DPOR/ Interpretation and Education, and possibly BLM Interpretation, to develop and install signs interpreting the past at pullouts and trailheads. Regional public presentations should be done, describing the regional prehistory and OHA's management of the cultural resources on Denali Highway lands.

Coordination should continue with BLM and Native organizations on projects that benefit the management and interpretation of the cultural resources of the region. A small archaeological field school, possibly done in conjunction with BLM, NPS, or local Native groups, could train local people for seasonal archaeological and interpreter positions and help foster an appreciation for archaeology as a way of knowing the past. Presentations on Denali Highway archaeology and atlatl demonstrations could be done

for regional Spirit Camps, informing Native youth about the archaeological evidence of their past, and encouraging a greater appreciation of science and of their own culture.

Lastly, and possibly most importantly, OHA should continue to maintain dialogues with all parties interested in the cultural resources on Denali Highway lands.

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VIII. GLOSSARY

AHRS - The Alaska Heritage Resources Survey. Database of historic properties kept by Alaska SHPO's office.

Archaeological site - The material constructs or remains of historic or prehistoric human activity.

Area of Potential Effect (APE) - That geographic area where the project could either directly or indirectly impact the cultural resources.

Atlatl - Another term for a spearthrower.

BLM - The Bureau of Land Management, a federal land management agency responsible for managing much of the land along the Denali Highway and the Copper River Basin.

Cryoturbation - Soil movement caused by the freeze-thaw process.

Cultural Resources - Any resource that is the result of human activity. May be a "historic property" (see below), artifact, document, or social institution (King 1998:265).

Cultural Material - Generally historic or prehistoric artifacts.

Dart - A spear thrown by an atlatl (spearthrower).

Denali Blocks – Large parcels of land along the Denali Highway in central Alaska, conveyed from BLM to the State of Alaska as part of statehood land selection.

DNR - State of Alaska Department of Natural Resources. State agency responsible for management of State's resources.

DMLW – Division of Mining, Land and Water

DPOR - Division of Parks and Outdoor Recreation.

EIS - Environmental Impact Statement. An evaluation of potential environmental impacts resulting from the implementation of a project.

Flake Scatter - Two or more lithic flakes found on the ground surface.

Glacial Lake Atna – Massive glacially dammed lake that covered most of the Copper River Valley in the Late Pleistocene and possibly early Holocene.

Greater Tangle Lake – Late Pleistocene/early Holocene lake that existed where upper Tangle Lakes (Tangle Lakes south of Denali Highway) now lie. Lake was dammed by a moraine or esker, possibly ice-cored, that gave way and caused the lake to drain approximately 8,000 years ago.

Heritage Resources - Cultural Resources

Historic Properties - Properties that are included in or may be eligible for the National Register of Historic Places. May be historic buildings, prehistoric archaeological sites, shipwrecks, etc.

Holocene - Current geologic time period, referring to approximately the last ~10,000 years, since the end of the last Ice Age

Lithic - Stone.

Microblades - Small stone blades flaked from prepared micro-cores, usually inset in wood or antler for use as knives or projectile points.

Mitigation – To offset the (adverse) effects of (an act)(Neumann and Sanford 2001:234). The recovery of information from a cultural site that is being damaged or destroyed by some process, either man-made or natural. Mitigation may include thorough site documentation and archaeological excavation.

Multiple Use - Alaska Statutes define "multiple use" to refer to the management of State land and its various resource values, including "(A) the use of some land for less than all the resources; and (B) a combination of balanced and diverse resource uses that takes into account the short term and long term needs of present and future generations for renewable and non-renewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific, and historic values:" (Alaska Statutes 38.04.910.5A & B).

NPS - National Park Service. U.S. Department of Interior, with the responsibility of managing national park lands.

NHPA - National Historic Preservation Act of 1966: defines and sets priorities for National Historic Preservation Program, including SHPO offices, and identifies responsibilities of federal agencies for protection of historic properties. Legislation requires federal agencies to check for impacts their undertakings may have on properties eligible for the National Register before a federally enabled undertaking proceeds. Under this act federal agencies are requires to consult with SHPO and tribes on their undertakings (Neumann and Sanford 2001:234).

NRHP - National Register of Historic Places. A list of districts, sites, buildings, structures and objects maintained by NPS, each determined by NPS to be of historic, cultural, architectural, archaeological, or engineering significance at the national, State or local level. Also called National Register (King 1998:266).

OHA - The State of Alaska Office of History and Archaeology, an office in DNR/Division of Parks and Outdoor Recreation, that administers the State Historic Preservation Program (AS 41.35). Contains Alaska SHPO.

OHV - Off-Highway-Vehicle. This includes single and multi-person "four-wheelers", tracked vehicles, etc., that are not licensed for highway use.

RS2477 - Part of an 1866 mining law that reserves rights-of-way for construction of thoroughfares over public lands. With statehood, the State of Alaska took over management of RS2477 trails.

Section 106 Process - Procedure set out in response to NHPA Section 106 meant to identify and resolve any adverse effects likely to be caused by a Federally enabled activity on cultural resources (Neumann and Sanford 2001: 236).

SHPO - State Historic Preservation Office. State office that administers the national historic preservation program (NHPA). Office identifies historic properties, nominates properties to National Register, maintains cultural resource inventories (in Alaska this includes AHRS), and consults with others about historic preservation (King 1998: 267).

Stratigraphic Context - The relationship between the culturally deposited horizon(s) and the surrounding sedimentary units.

TLAD - Tangle Lakes Archaeological District. A 226,660 acre district, rich in archaeological sites, found on state land (north) and BLM managed land (south) of the Denali Highway, between highway Mileposts 17 and 37.

TLAD/SUA - Tangle Lakes Archaeological District/Special Use Area. A State land designation for the region north of the Denali Highway in Denali Block I that surrounds the northern section of the TLAD.

Appendix I

Cultural Resource Management Checklist

Identify and Evaluate Cultural Resources

- Contact AK State Historic Preservation Office (SHPO) Review and Compliance section, and consult on potential for impacting cultural resources in the project area.
- Check Alaska Heritage Resources Survey (AHRS) for reported historic or prehistoric sites. AHRS is statewide inventory, recorded on USGS maps.
- If inadequate information, then SHPO may recommend archaeological survey. (Less than 10% of the state has been archaeologically surveyed.)
- Personnel conducting survey for federal projects (ie, Section 106) must meet Secretary of the Interior's Standards (36 CFR 61).
- Consult with SHPO on significance of cultural resources in project area.
- Apply for archaeology permit, if applicable.

Assess Impact of Project

- Determine if significant cultural resources will be affected by project.
- Consult with SHPO on adjusting project to avoid or minimize adverse effects.

Mitigating Adverse Effects

- If adverse effects cannot be avoided, then need to mitigate.
- Possible mitigation: scientific documentation, interpretive signs

Federally Permitted Project: Section 106 Process (National Historic Preservation Act)

- Any projects requiring federal permits (example: COE or EPA)

(36CFR800 requires federal agencies to consult with SHPO regarding impacts to cultural resources before issuing permits.)

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